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A glimpse at shrimp culture in Indonesia

By **AP Surtida**

Just like the Philippines, shrimps in Indonesia were by-products of milkfish culture in traditional brackishwater ponds. It became the main product of aquaculture ponds when appropriate culture technology, including mass production of seeds, became available in the '80s. It was also the result of a national program of shrimp culture development in anticipation of the trawl ban in 1980 which would reduce marine shrimp production (Nurdjana 1997).

In 1998, foreign exchange earnings from shrimp increased by 11%, from US\$1.35 billion to 1.5 billion according to Johannes Kitono, chairman of the Association of Indonesian Shrimp Feedmeal Producers (Fish Farming International 1999).

Kitono added that the US market has the greatest potential, and that Indonesia's shrimp export rose by 19% in 1998 to 15,285 tons. Thailand has been the biggest shrimp exporter to the US in the past three years, while Indonesia ranks fifth, said Kitono.

Kitono further added that the government needs the support of all producers to meet a target of one million tons of shrimp (with exports of 600,000 tons) by 2003.

There are three factors affecting the Indonesian shrimp culture industry: (1) biological production capacity (2) environmental carrying capacity and (3) economic conditions.

Wisened from the follies of past experiences, the Government of Indonesia decided to develop a sustainable shrimp culture industry in order to achieve optimum sustainable income, optimum use of natural resources and sustainable environment. The policies to develop the industry include: (1) adjustment of the production intensities of shrimp culture in the Java Island to meet the conditions of sustainable resources use and sustainable production, and (2) extension of shrimp culture area into potential areas outside of Java Island. Total shrimp culture area that will be developed is about 250,000 hectares (Nurdjana 1997).



Farmed shrimp continues to be Indonesia's top seafood export. PROTEKAN 2003, a government program, aims to increase foreign exchange earnings -- estimated to be US\$6.7 billion -- mainly from farmed shrimp

Pond area, species and production:

Total area of brackishwater ponds

1986	241,000
1995	333,000*

*managed by 126 thousand units of households

Shrimp species harvested from brackishwater ponds

Black tiger shrimp *Penaeus monodon***
White shrimp *P. indicus***
Banana prawn *P. merguensis*

**main cultured species

Total shrimp production harvested from ponds (in thousand tons)

1986	43
1992	144
1994	137
1995	149

Aquaculture by the numbers

233 - the number of hatcheries supporting the shrimp industry in 1995, with total production capacity of 5 billion fry a year

45 - the number of feed factories (1995) producing 526,00 tons of feed per year

25% - rate of increase per annum in the production of cultured tiger shrimp between 1986-1995

11% - rate of increase per annum for banana prawn for the same period above

8.9% - rate of increase per annum for *Metapenaeus* spp for the same period above

89,300 tons - production of the tiger shrimp in 1992 from 15,400 tons in 1986

83,200 tons - production decline in 1994

25% - rate of increase in tiger shrimp production due to intensification of existing ponds. It was greater than the increase in total pond area (3.7 per year)

Shrimp export, 1986-1995

	Volume (x 10 ³ tons)	Value (US\$ x 10 ⁵)
1986	36.1	285
1990	94.0	690
1992	100.5	765
1995	94.5	1037

Estimation of employment benefits from shrimp culture

Production intensity	Total area of ponds (10 ³ ha)	No. of workers (people per ha)	Total workers	Estimated wages (Rp x 10 ⁶ per year)
Intensive	27.3	3	81,900	209,255
Semi-intensive	37.1	2	74,200	135,415
Extensive	262.5	0.5	131,254	143,723
Total	326.9		287,354	488,393

A shrimp farm-level survey was conducted in the provinces of east Java and South Sulawesi after the crop failure in 1994. The crop failure was caused mainly by disease outbreaks (i.e., degradation of the environment) and was exacerbated by drought. The respondents' conclusions are as follows (Aquaculture Asia 1998):

- Intensive shrimp culture should be controlled based on carrying capacity of areas
- Controlled use of drugs and chemicals to avoid deterioration of water quality
- Observance of ministry regulation that mangroves areas should be maintained at 200 meters from seashore or 50 meters from riverbank in brackishwater farming

The national action plan for sustainable aquaculture, particularly in shrimp farming was formulated as follows:

- The government encourages private investors in shrimp farming in the areas outside Java Island.
- Semi-intensive culture is encouraged particularly in the densely cultured areas, by reducing stocking density and applying less chemicals.
- Recommendation of better shrimp culture management particularly in seed production, water management and post harvest.

Also, in shrimp farming systems, farmers in the same area are encouraged to cooperate more closely, particularly in the use of water supply and discharge of used water to drainage canals. Synchronizing the timing of change of water at high tide and discharge at low-tide is also being encouraged.

The government has since extended the following assistance to shrimp farmers:

- construction/rehabilitation of migration canals in brackishwater pond areas.
- advice on site selection, pond management and post-harvest through extension services.
- seed production technology
- disease prevention in grow-out ponds

A loan from the Asian Development Bank (ADB) has been obtained for the private sector under the Second Brackishwater Aquaculture Development Project to develop shrimp culture outside Java Islands.

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